



QXS Licensing Guide

Figure 1 provides an illustration of the QXS systems that support the applicable QXS licenses:

- 12-drive system (2U high)
- 24-drive system (2U high)
- 48-drive system (2U high)
- 56-drive system (4U high)

Figure 1 QXS Systems



1 12-drive system (2U high)	2 24-drive system (2U high)
3 48-drive system (2U high)	4 56-drive system (4U high)

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Supported and Unsupported Systems

This section covers the following information:

- [Supported Systems](#)
- [Unsupported Systems](#)

Supported Systems

The information and instructions in this document are for Quantum-branded systems only, and do not apply to the Dot Hill/Seagate-branded systems and other QXS systems. See [Unsupported Systems](#) for more information.

Note: Q-Tier License:

- The QXS-3 Series systems **do not** support the Q-Tier license.
 - The QXS-4 and QXS-6 Series systems **do** support the Q-Tier license.
-

- QXS-3 Series
 - QXS-312 (12-drive chassis)
 - QXS-324 (24-drive chassis)
- QXS-4 Series
 - QXS-412 (12-drive chassis)
 - QXS-424 (24-drive chassis)
 - QXS-448 (48-drive chassis)
 - QXS-456 (56-drive chassis)
- QXS-6 Series
 - QXS-648 (48-drive chassis)
 - QXS-656 (56-drive chassis)

Unsupported Systems

Systems **not** supported by this document are:

- Dot Hill/Seagate-branded
 - The serial number is the key.
 - If the serial number starts with “DHS”, system is not supported.
- QXS-1200
- QXS-2400
- QXS-5600
- QX-1200 and QX2400
- Xcellis embedded metadata arrays

Note: If you add primary QXS storage to an Xcellis system, this document applies to that primary QXS storage.

- Artico
- Pro Foundation

Note: QXS licenses are preloaded on Excellis, Artico, and Pro Foundation. The QXS system is considered embedded storage within these systems.

- Other appliance hardware that uses “embedded” QXS

QXS Standard and Optional Licenses

This section covers the following information:

- [QXS Online Help License Names](#)
- [QXS Licenses and Features](#)

QXS Online Help License Names

Note: The Disk Management System (V3 GUI) provides online help that uses Seagate-centric license names.

Quantum license names differ from those presented in the License Settings panel. [Figure 2](#) provides the Quantum license names and compares them to the Seagate-centric names in the License Settings panel.

Figure 2 Seagate-Quantum License Name Comparison

Seagate Feature	Quantum License Name
Licensed Snapshots	Q-Snap
Virtualization	Q-Tools
Performance Tier	Q-Tier
Volume Copy	Q-Copy
Replication	Q-Replicate

QXS Licenses and Features

[Table 1](#) lists the QXS licenses and some of their features that are available through Quantum.

Note: [Table 1](#) also shows the applicable Seagate name that you might need as a reference. The Seagate names appear in the QXS GUI.

See [QXS License Descriptions](#) on page 6 for detailed information on all licenses.

Table 1 QXS Licenses

Quantum Name	Seagate Name	Features	Standard or Optional Feature
Q-Tools	RealStor, Virtualization	<ul style="list-style-type: none"> SSD Read Cache Creation of virtual pools. Quick rebuild. Thin provisioning—allocate physical space just-in-time. 	Standard

Quantum Name	Seagate Name	Features	Standard or Optional Feature
Q-Tier	RealTier AssuredTier Performance tier SSD Tier	<p>Ensures that the most frequently used data is in the highest-performing storage. Constant background scanning for “hot” data with “hot” data moved immediately—no waiting.</p> <ul style="list-style-type: none"> • Real-time • Intelligent • Automated • Tier data based on usage from HDD to HDD (for example, 7K to 10K/15K) and HDD to SSD. • Frequently accessed, “hot” data can move to drives with higher performance, lower capacity, and higher costs. • Infrequently accessed, “cool” data can move to drives with higher capacity, lower performance, and lower costs. 	<p>Optional</p> <p>Note 1: Not supported on the QXS-3 Series Systems.</p> <p>Note 2: Q-Tier is pre-installed on the Xcellis SSD system (embedded QXS has SSDs installed).</p>
Q-Replicate	RealSpan RealRemote AssuredRemote Replication	<ul style="list-style-type: none"> • Schedule when replications will occur. • Uses snapshots. • Optimal for long distances. • Minimizes time and bandwidth vs synchronous replication. 	Optional
Q-Snap 3xx Q-Snap 4xx Q-Snap 6xx	RealSnap AssuredSnap Licensed snapshots	<p>Distinct snapshot licenses are provided for QXS-3, QXS-4, and QXS-6 Series Systems. Keys are issued for the maximum number of snapshots for each system/controller type.</p> <ul style="list-style-type: none"> • QXS-3: 512 snapshots • QXS-4: 1024 snapshots • QXS-6: 1024 snapshots 	<p>Optional</p> <p>Note: The correct license must be purchased and installed, based on the controller type (QXS-3, -4, and/or -6 Series arrays).</p>
Q-Copy	RealCopy AssuredCopy Volume Copy	<ul style="list-style-type: none"> • Makes a copy of data to another set of disks within the array • Controller based • No host resources used 	Optional

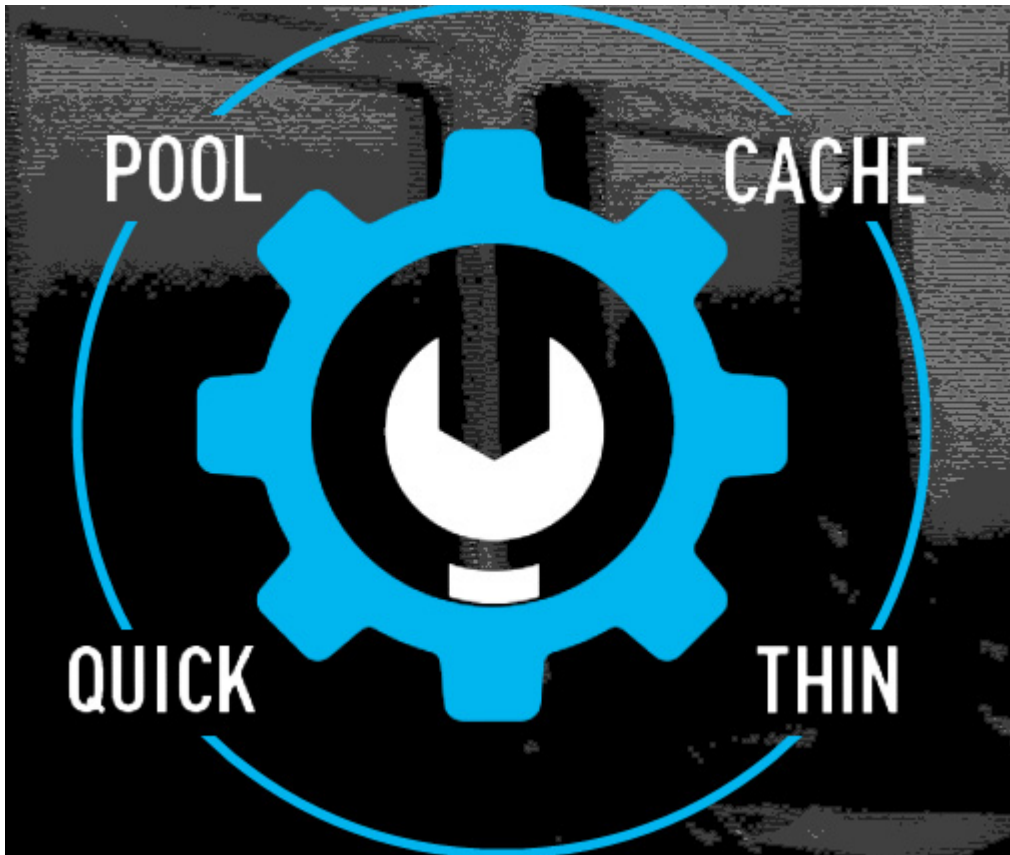
QXS License Descriptions

This section provides a detailed description of the QXS licenses. The information includes:

- [Q-Tools](#)
- [Q-Tier](#)
- [Q-Replicate](#)
- [Q-Snap](#)
- [Q-Copy](#)

The Q-Tools license is a standard option on all QXS systems (pre-installed).

Figure 3 Q-Tools Standard Option



Q-Tools

Q-Tools includes the following options:

- [Cache — SSD Read Cache](#)
- [Thin Provisioning](#)
- [Automatic Pooling](#)
- [Quick — RAID Rapid Rebuilds](#)

Cache — SSD Read Cache

Cache supports SSD/HDD configurations that dramatically increase the amount of read-cache available to the storage system.

Using one or two SSDs in the storage configuration automatically activates the read-cache function, which can improve the overall performance of read-intensive applications and workloads.

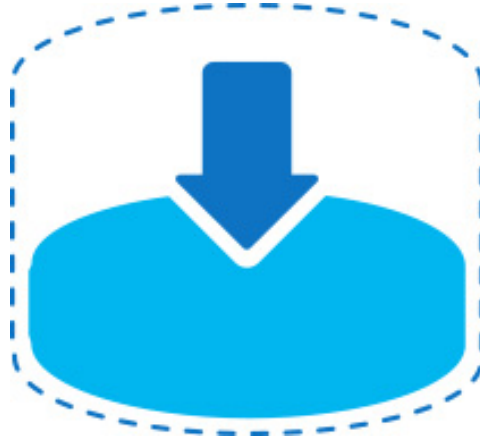
Figure 4 Cache — SSD Read Cache



Thin Provisioning

Thin provisioning streamlines the tasks of provisioning and modifying volumes, allowing IT managers to respond to data growth as needed.

Figure 5 Thin Provisioning



Disk space is only used when written to, and LUN size is independent of the physical disk space used. IT managers can add storage when needed, easily expanding volumes non-disruptively.

Automatic Pooling

With Storage Pooling, the disks—whether physical or logical—can be aggregated into pools from which the logical volumes are allocated. This greatly simplifies storage allocation by eliminating the need to manage partitioned space on the physical storage resources.

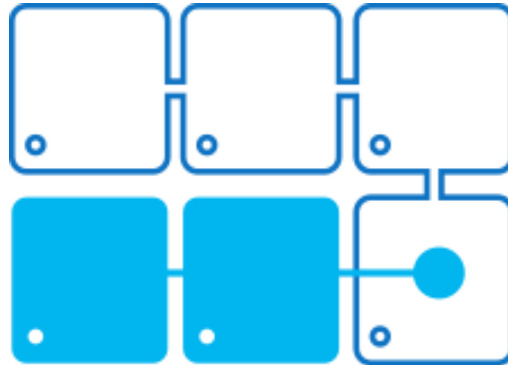
Figure 6 Automatic Pooling



Quick — RAID Rapid Rebuilds

Within each collection of disk drives that make up a storage pool, data is further protected with RAID redundancy within each tier. In a typical RAID system, rebuilding a drive can be time consuming, especially with high capacity drives, because each sector requires rebuilding.

Figure 7 Quick — RAID Rapid Rebuilds



Quick speeds up RAID rebuilds, because only the sectors that contain actual data are rebuilt, resulting in up to 5 times faster restoration of the RAID set. For instance, a drive that is only 50 percent utilized will rebuild in 50 percent less time with Quick.

Q-Tier

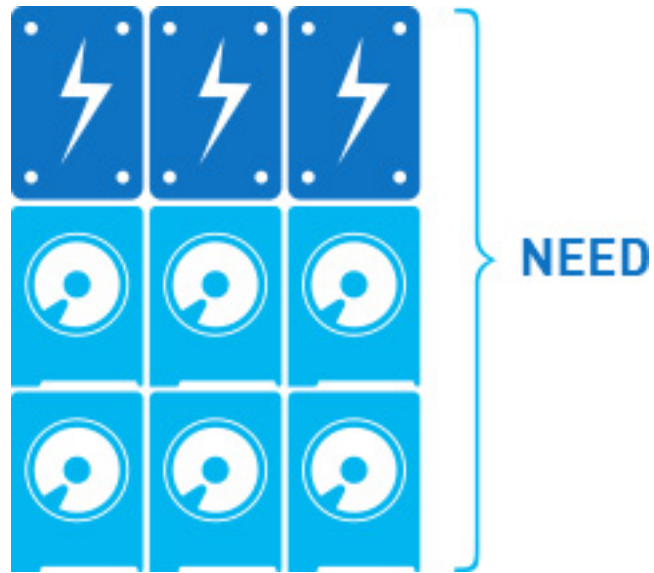
QXS Q-Tier provides intelligent, automated, real-time storage tiering, by moving the most frequently used data onto the highest-performing storage tier for optimal performance.

Keeping in-demand data in the highest-performing storage is the smart thing to do. QXS hybrid storage incorporates intelligent data access algorithms to ensure that the most requested data is placed in the highest-performing tier, seamlessly and automatically. This enables the optimal use of higher-cost, high-performance storage.

Note: Q-Tier License:

- The QXS-3 Series systems **do not** support the Q-Tier license.
 - The QXS-4 and QXS-6 Series systems **do** support the Q-Tier license.
-

Figure 8 Data Tiering



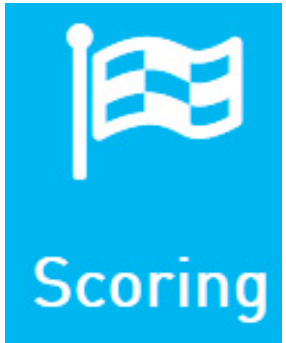


Existing Tiering Software vs Q-Tier

Existing tiering software often works in a batch mode, moving large amounts of data every 24 hours or is policy-based and requires significant manual intervention. Organizations today operate 24x7, with no down time. Moving large data sets in a batch process slows down applications, slowing down business.

Q-Tier considers the dynamic nature of the data being accessed and automatically and continuously moves the data to the appropriate tier to immediately and consistently improve application and business performance.

Quantum's QXS Q-Tier

QXS Q-Tier is intelligent, automated, real-time storage tiering that ensures that the most frequently used data is in the highest-performing storage when it is needed. QXS Q-Tier uses an intelligent algorithm that continuously scores, scans and sorts the data. This scoring, scanning, and sorting process occurs every 5 seconds, continuously moving data between tiers as the data being accessed changes.

Function	Description
	Evaluates the data based on how frequently and how recently it is accessed.
	Constant background scanning identifies high-score data. A scan occurs every 5 seconds, using less than 1% of system CPU.
	Immediately moves data to the appropriate tier.

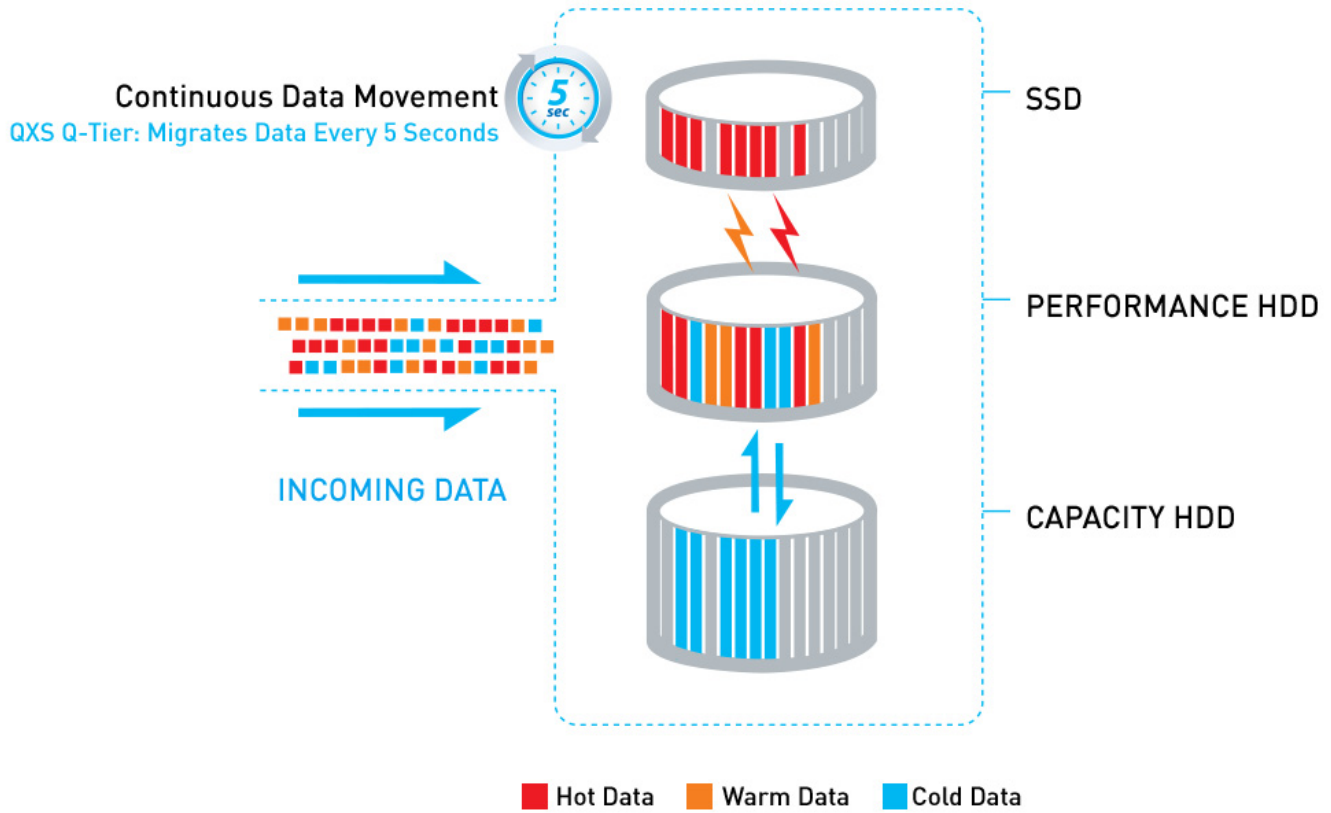
Optimizing Storage Investment

Tiering data requires both computing power and storage bandwidth. Unlike other hybrid storage arrays that tier data daily to avoid performance degradation during peak hours, QXS arrays have dedicated processing and dual active-active controllers to tier data every 5 seconds, constantly promoting active workloads to the fastest tier available, with no reduction in performance.

This provides the most needed data with the highest I/O possible, and also reduces bottlenecks.

Figure 9 Storage

Figure 9 provides an example of data movement between capacity HDDs, performance HDDs, and SSD.



Q-Replicate

Q-Replicate software enables IT professionals at small to medium-sized businesses to solve many of today's critical data protection challenges by building complete solutions for business continuance, disaster recovery, and regulatory compliance. Q-Replicate works between two SAN arrays to replicate data between sites, protecting valuable data assets.

Q-Replicate provides the ability to quickly protect your storage environment. Using the existing point-in-time snapshot technology, Q-Replicate only captures changed data, limiting the amount of data copied across to the remote site.

Unlike other replication technologies, the Q-Replicate implementation is both easy and fast, and also reduces the size of snapshots by storing only a single instance of changed blocks. This minimizes the amount of data to be copied across data lines.

Figure 10 Replicating Data



Features include:

- Use over Ethernet or Fibre Channel.
- Ethernet ports can be used for both local and replication traffic.
- Replication snapshots can be used for both local and remote recovery.
- Remote site can be 'stood up' for a period then 'failed back' to the primary site to resume normal operations.
- Bi-directional replication allows an array to act as both a primary and a remote site.

Q-Snap

Q-Snap provides the ability to create point-in-time copies or backups of disk volumes, with instant restoration of data to any captured (snapshot) point in time. Since Q-Snap only copies data that has changed, it can virtually eliminate backup windows.

Q-Snap uses a method called "Single Copy-on-Write (SCW)" and includes Original/Write Data Preservation technology. Unlike other snapshot technologies, Q-Snap is not only fast, but it also reduces the size of snapshots by storing only a single instance of changed blocks.

Original/Write Data Preservation technology is unique in the market, allowing IT managers to snapshot and write to newly created snapshot volumes. This enables rollbacks to the original snapshot or to the modified or updated snapshot. This is ideal for testing new software or prototyping new applications.

Q-Copy

Q-Copy provides the ability to create full volume copies or backups of disk volumes and quickly restore whole volumes, folders, or individual files. Q-Copy creates a full volume copy, which protects against disk failures, accidents, or attacks.

With Q-Copy, whole volumes, folders, or individual files can be quickly restored from the volume copy. Q-Copy provides additional protection against complete volume or RAID group loss. If a double disk fault occurs in a RAID 5 set, the source data remains protected; this would not be the case with snapshots.

Volume copies can be mounted to other application hosts to provide production data support for backup, rapid development and test, data mining, decision support, and other applications, without putting production data at risk or impacting application performance, because access is to an independent data set.

The QXS 'set and forget' scheduler capability gives storage administrators peace of mind, knowing that the storage system is automatically making snapshots and volume copies.

Acquiring QXS Licenses

Quantum-branded QXS-3/4/6 systems receive Q-Tools license by default.

- No certificate is required. The license is pre-installed.
- The user interface will show licenses pre-installed for a given serial number.

Note: Users who order add-on licenses receive a certificate with an authorization code for the licenses.

See [Installing QXS Licenses](#) on page 22 to verify what licenses have been pre-installed on your QXS system.

Optional QXS licenses that can be purchased include:

- Q-Tier

Note: Q-Tier License:

- The QXS-3 Series systems **do not** support the Q-Tier license.
- The QXS-4 and QXS-6 Series systems **do** support the Q-Tier license.

-
- Q-Replicate
 - Q-Snap 3xx, Q-Snap 4xx, and Q-Snap 6xx
 - Q-Copy

Acquiring License Certificates

You can order licenses from Quantum through the standard PO process. Quantum will send paperwork for the order

Note: This order process is only for the supported models. See [Supported Systems](#) on page 2 for a list of supported models.

Orders for systems listed in [Unsupported Systems](#) on page 3 do not follow the standard PO process.

If you have questions about the ordering process, see [Contacting Quantum](#) on page 28.

Certificate with Authorization Code

See [Figure 11](#) for an example of the certificate (with authorization code) that the you will receive with your order.

Figure 11 Certificate with
Authorization Code



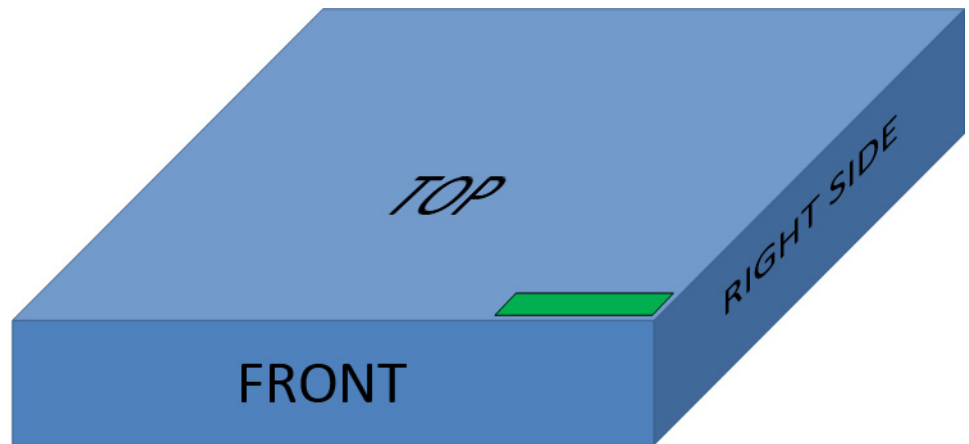
Finding System Serial Number

You can find the system serial number on the top of the RAID chassis, or in the disk management utility (GUI).

System Serial Number on RAID Chassis

- 1 Retrieve the serial number from the top of the RAID chassis.
 - a The serial number is located at the top right of the chassis.
 - b Refer to [Figure 12](#) for serial number location.

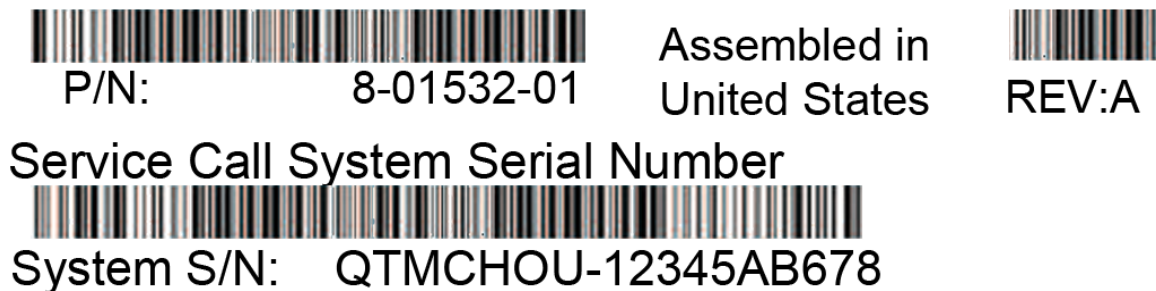
Figure 12 Serial Number Location on RAID Chassis



- c A Quantum serial number example is ([Figure 13](#)):
QTMCHOU-12345AB678

Note: A valid serial number is required for the license acquisition to work properly. If an incorrect serial number is entered, you cannot acquire the applicable license.

Figure 13 Serial Number Location on RAID Chassis



- 2 Record the RAID chassis serial number.

For easy record keeping, write the serial number in this location:

System Serial Number Using Disk Management Utility (GUI)

- 1 Access the disk management utility (V3 GUI).
- 2 Select **System** on the left side of the screen.
- 3 Select either the **Front** or **Rear** tab.

Note: The system serial number will be that of the RAID chassis, which is the top chassis on the **System** page.

- 4 Hover the cursor over one of the “ears” (far left or right) to display the **Enclosure Information** popup.
 - a The serial number you need is the **Midplane Serial** number.
 - b Refer to [Figure 14](#) for an example of the screen and Enclosure Information (RAID Chassis) popup (serial number).

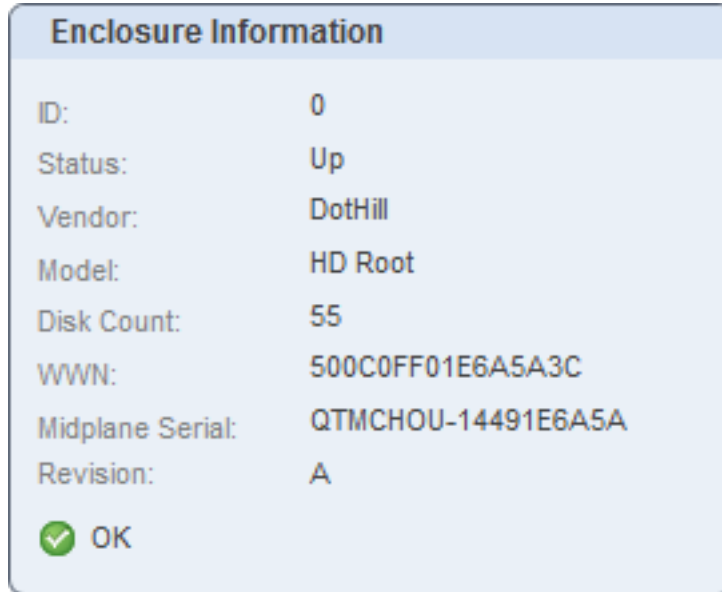
Figure 14 System Serial Number in the GUI

The screenshot displays the V3 GUI interface. On the left is a vertical navigation menu with icons for Home, System, Hosts, Pools, Volumes, Mapping, and Performance. The main content area is titled 'SYSTEM' and has tabs for 'Front', 'Rear', and 'Table'. The 'Front' tab is active, showing a grid of 14 SAS MDL 6TB drives arranged in two rows of seven. The top row is labeled 'DRAWER 0' and the bottom row is labeled 'DRAWER 1'. A mouse cursor is hovering over the left 'ear' of the top-left drive in Drawer 0. An 'Enclosure Information' popup is displayed in the bottom-left corner, showing the following details:

Enclosure Information	
ID:	0
Status:	Up
Vendor:	DotHill
Model:	HD Root
Disk Count:	55
WWN:	500C0FF01E6A5A3C
Midplane Serial:	QTMCHOU-14491E6A5A
Revision:	A
OK	

- c Refer to [Figure 15](#) for a closeup of the Enclosure Information (RAID Chassis) popup (serial number) screen.

Figure 15 Serial Number on
Popup Screen



QXS License Process

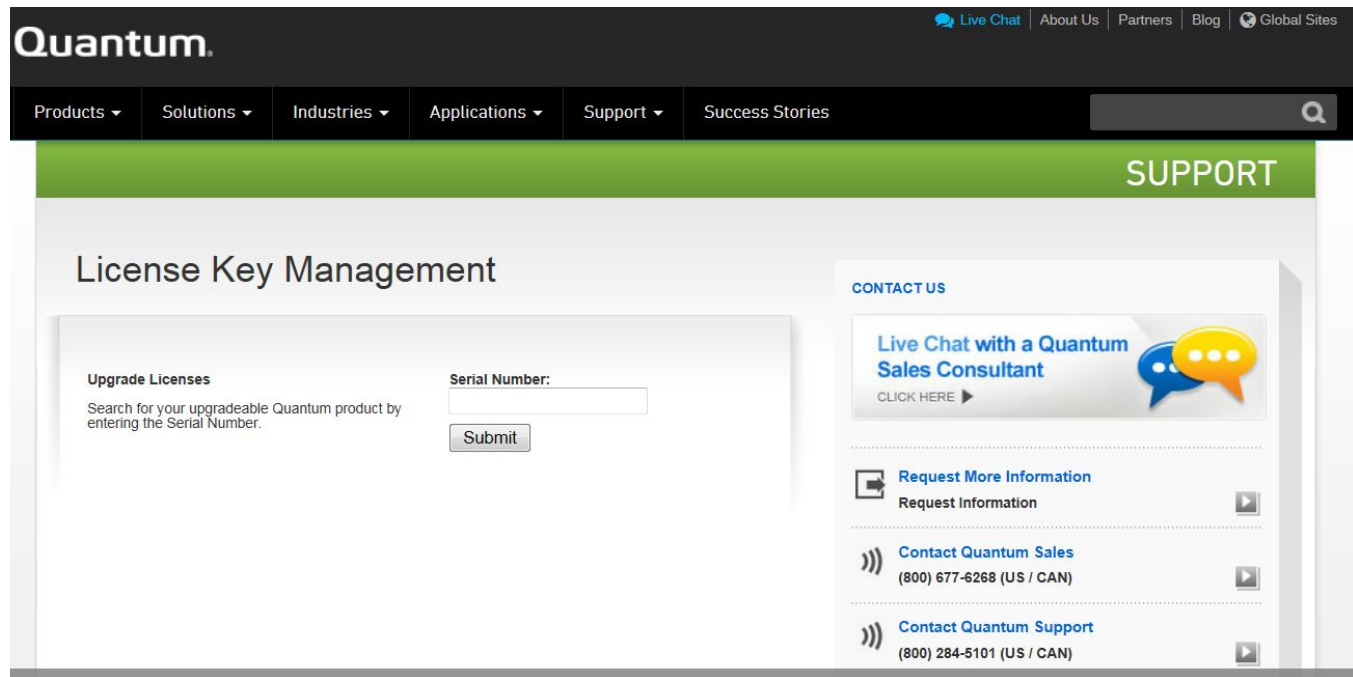
Complete the following steps to review current licenses or to acquire QXS licenses:

Note: If you want to check the current licenses on a system, complete [Step 1](#) to [Step 4](#).

- 1 Access the License Key Management website at ([Figure 16](#) on page 19): <http://www.quantum.com/licensekeys>
- 2 Enter the RAID chassis Serial Number on the **License Key Management** website page.
- 3 Click on the "Submit" button.

Note: You will receive a license file. You must apply the license file through the QXS GUI (V3).

Figure 16 License Key Management Website



- 4 Verify that the second License Key Management website page appears ([Figure 17](#) on page 20).
 - a Any licenses applied to the serial number are shown.
 - b Any factory installed licensing is also shown.
 - c Names on this page are subject to change to align with Q-xxx names.

Figure 17 Second License Key Management Page

Activated Feature	Authorization Code	Date	
VSS	factory installed	02-25-2016	details
VDS	factory installed	02-25-2016	details
SRA	factory installed	02-25-2016	details
REPLICATION	8ZT7-QDBB-CNJV-HF3D	02-25-2016	details

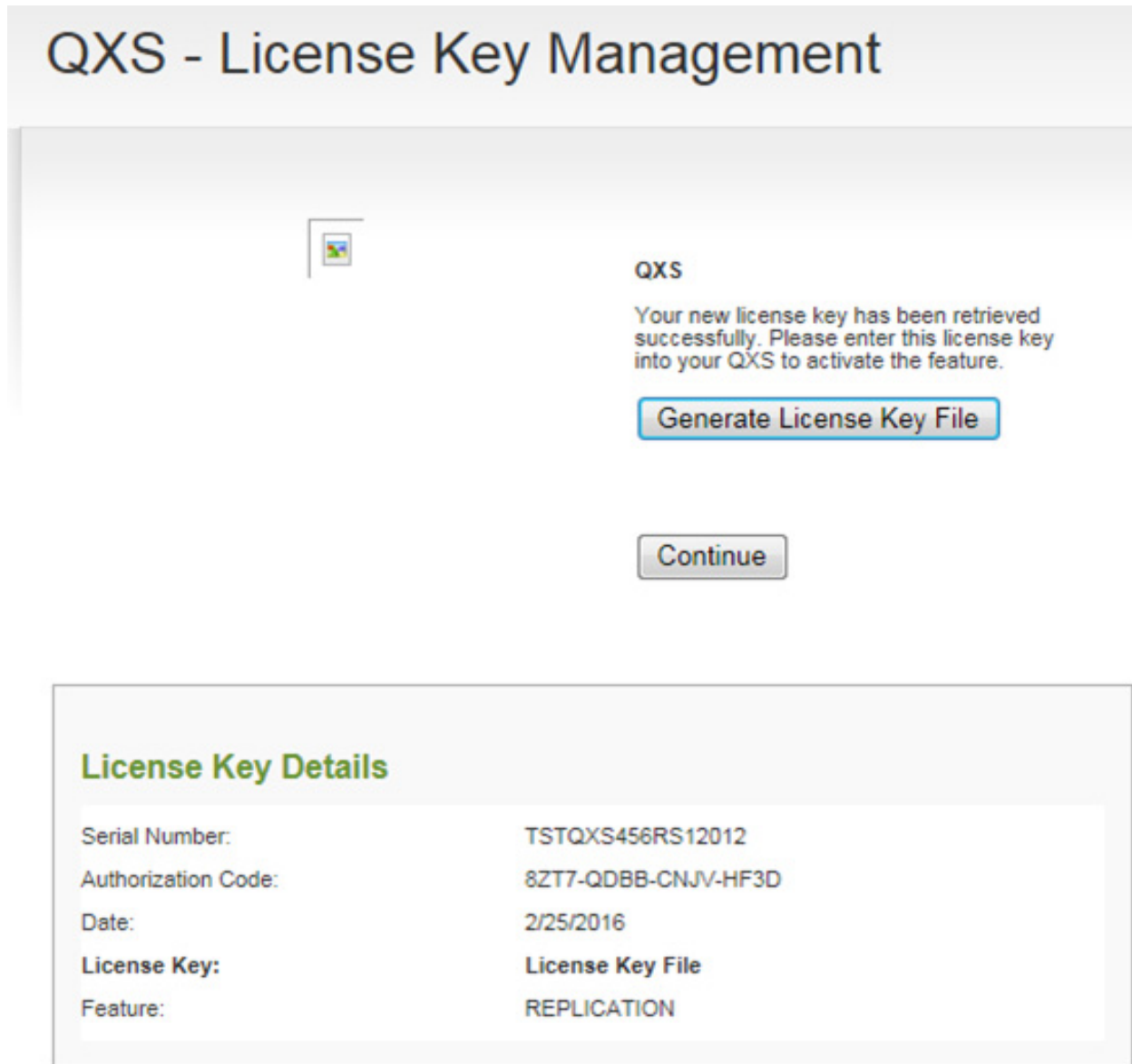
5 Enter the “Authorization Code” into the field by the “Get License Key” button ([Figure 17](#)).

Note: The Authorization Code is a one-time use only.

6 Click on the “Get License Key” button.

7 When the authorization is entered, and if the authorization code is accepted, verify that a third License Key Management page appears ([Figure 18](#) on page 21).

Figure 18 Generate License
Key File



8 Click on the Generate License Key File.

Note: You will receive a license key file. You must apply the license key file through the QXS GUI (V3).

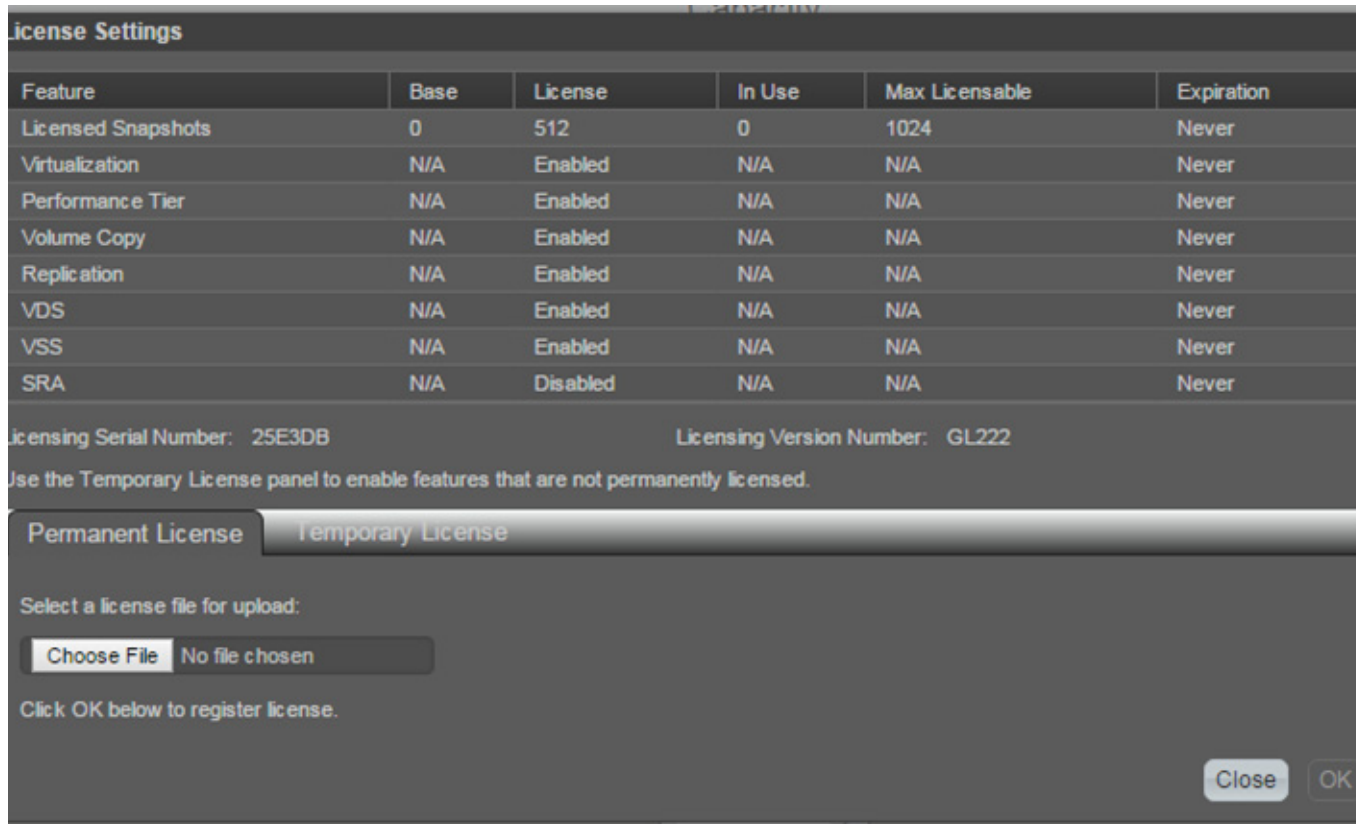
- 9 Save the license key file to a convenient location on your local system.
- a The generated file contains only the single key associated with the authorization code.
 - b Keys are only useful for a single serial number.

Installing QXS Licenses

Use the Disk Management Utility (V3 GUI) to install the applicable QXS license. The **License Settings** GUI page identifies installed licenses and lets you specify a license file to apply a new license ([Figure 19](#) on page 22). Information on the page includes:

- Snapshot license are represented by a count (example: 512)
- License names on GUI remain Seagate-centric at Gx222 firmware

Figure 19 GUI License Settings View

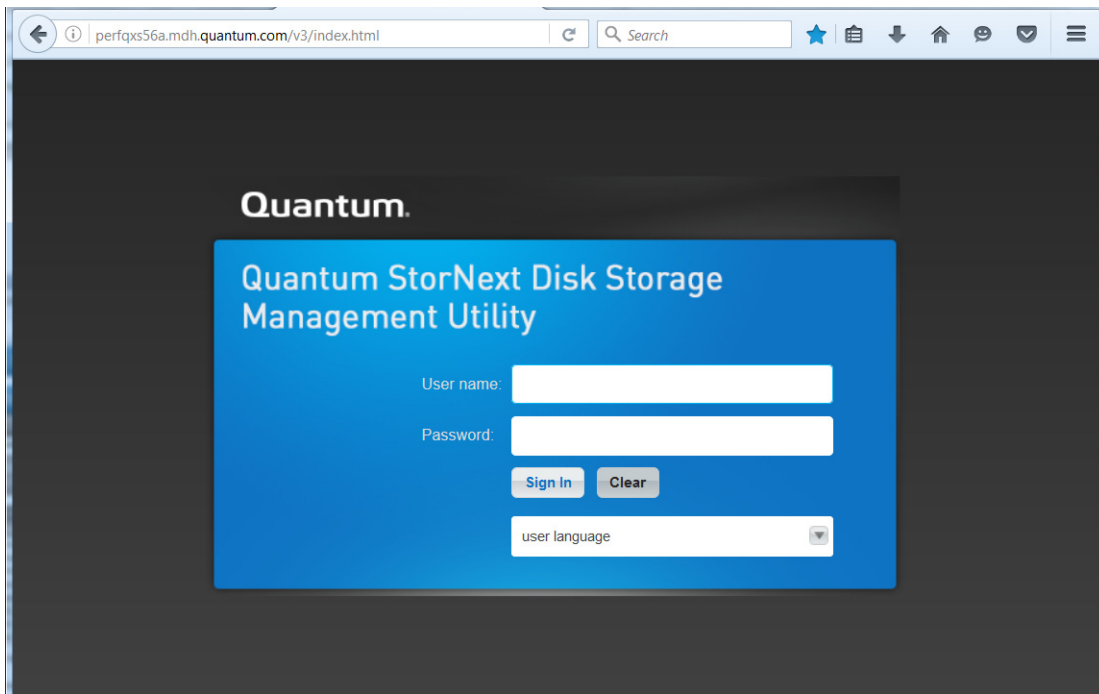


Installing a License Using V3 GUI

Complete the following steps to install the QXS license with the V3 GUI:

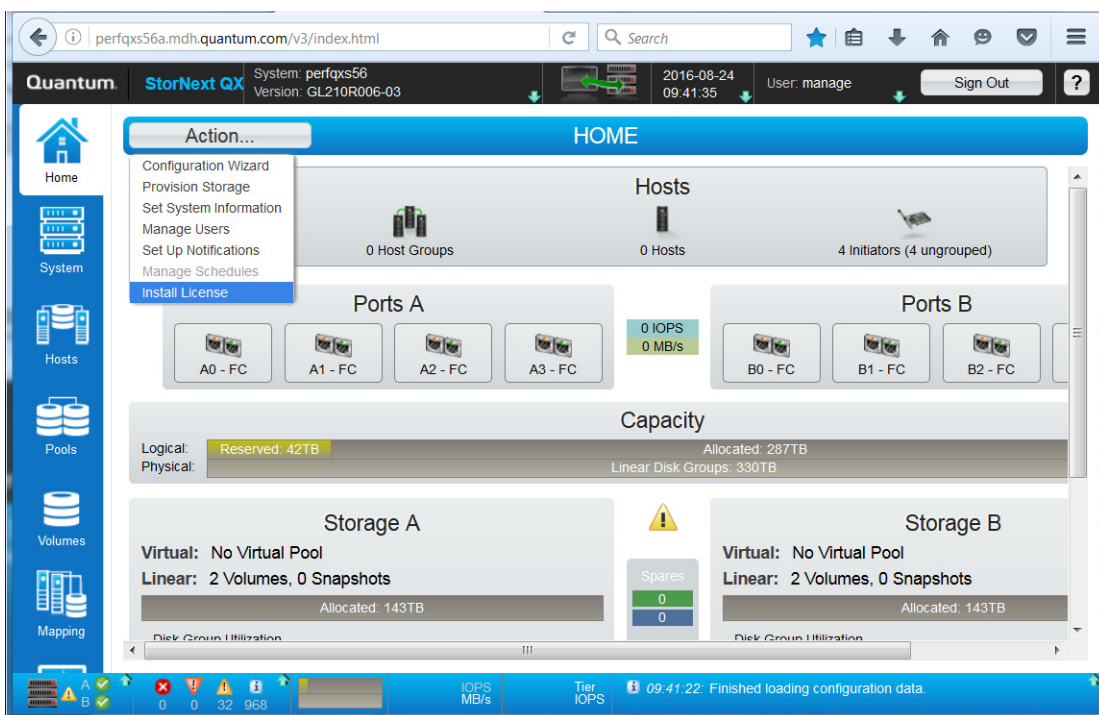
- 1 Log in to the disk management utility, V3 GUI ([Figure 20](#) on page 23).

Figure 20 Logging into V3 GUI



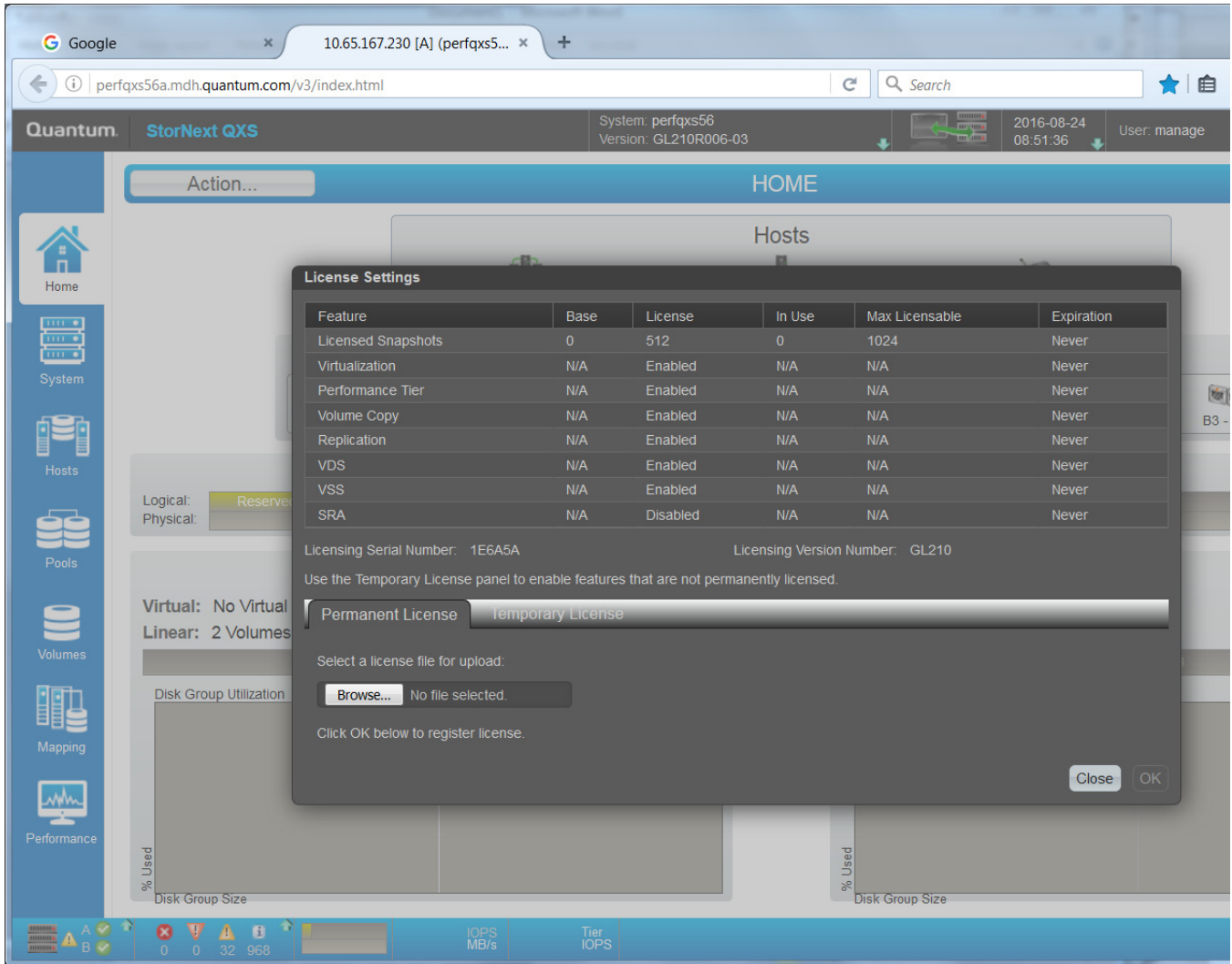
2 In Home topic, select **Action** > **Install License** ([Figure 21](#)).

Figure 21 Selecting Install License



- 3 Click the **Permanent License** tab, and then click **Browse** to locate and select the license file (Figure 22).

Figure 22 Choosing License File



- 4 Click **OK**.

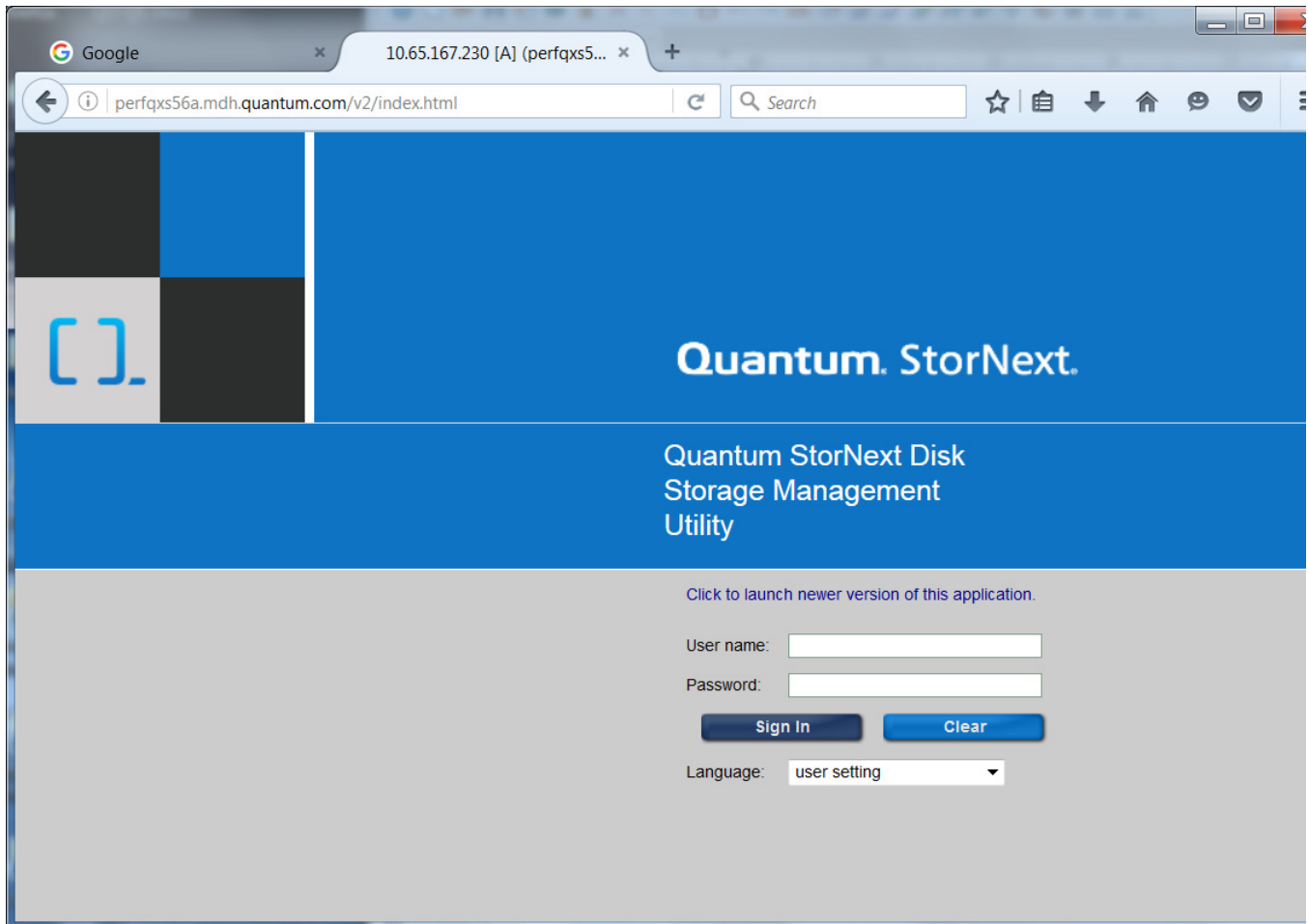
Note: The license becomes available after installation. A reboot of the RAID chassis is **not** required.

Installing License Using V2 GUI

Complete the following steps to load the QXS license with the V2 GUI:

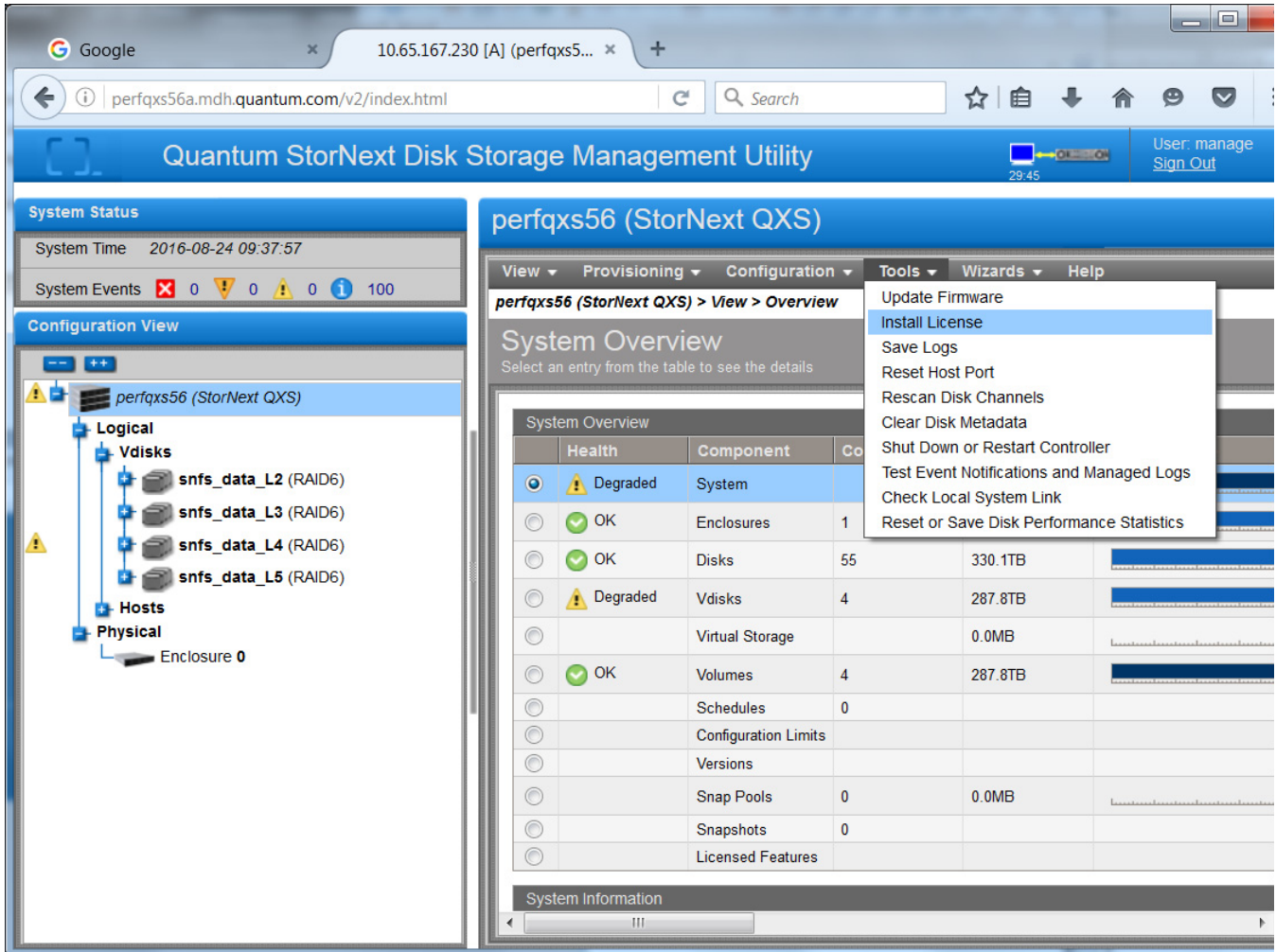
- 1 Log in to the disk management utility, V2 GUI ([Figure 23](#)).

Figure 23 Logging into V2 GUI



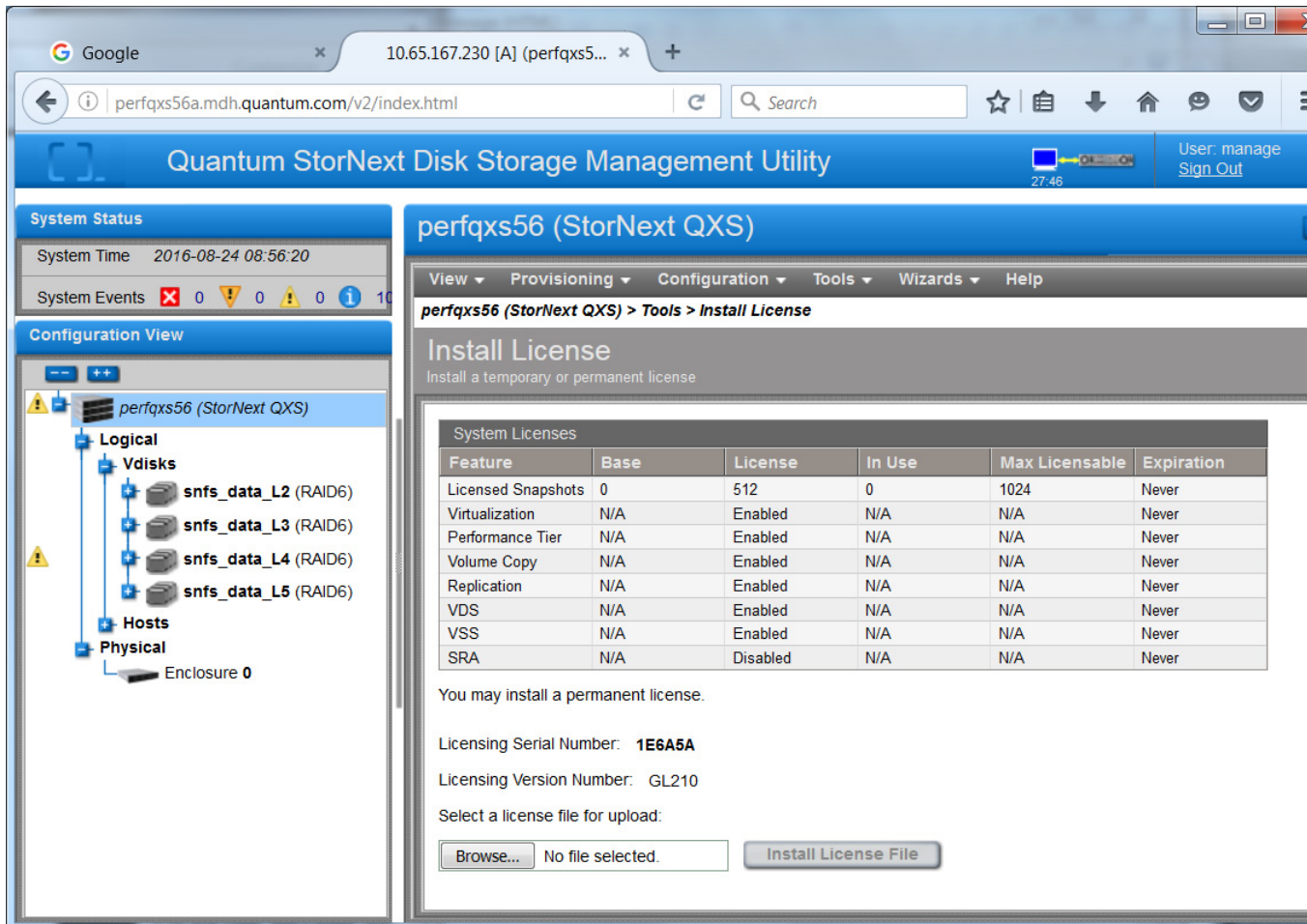
- 2 In the **Configuration View** panel, right-click on the system and select **Tools** > **Install License** (Figure 24).

Figure 24 Configuration View Panel



3 Click **Browse** to locate and select the license file (Figure 25).

Figure 25 Choosing License File



4 Click **Install License File**.

Note: The license becomes available after installation. A reboot of the RAID chassis is **not** required.

Contacting Quantum

More information about this product is available on the Quantum Service and Support website at <http://www.quantum.com/ServiceandSupport/Index.aspx>. The Service and Support Website contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if you are interested in training, contact the Quantum Customer Support Center:

United States	1-800-284-5101 (toll free) +1-720-249-5700
EMEA	+800-7826-8888 (toll free) +49-6131-324-185
APAC	+800-7826-8887 (toll free) +603-7953-3010

For worldwide support:

<http://www.quantum.com/ServiceandSupport/Index.aspx>
